

REMARKS / ARGUMENTS

Reconsideration of this application, as amended is respectfully requested. The following remarks are responsive to the Office Action mailed on September 19, 2006.

A total of 39 claims are now pending.

Claims 21 -- 32 have been cancelled, for a total of 12 cancelled claims.

Claims 33 -- 51 are new, for a total of 19 new claims.

Included in the 39 pending claims are 5 independent claims: claims 1 and 15 have been amended; claims 33, 42, and 51 are new.

No new matter has been added.

Claim Rejections - 35 USC 112

The examiner has rejected claims 25 and 26 as being indefinite, per 35 USC 112 second paragraph, with the assertion that they recite the limitation "the method", and that there is insufficient antecedent basis for such limitation.

Claims 25 and 26 have been cancelled; the rejected language does not appear in other claims.

Claim Rejections - 35 USC 102(b)

Re Claim 24

The examiner has rejected claim 24 with the assertion that it is anticipated by Freeman (4,375,966) who shows a dental tray 4 for creating dental impressions wherein the tray may contain a radiopaque agent (col. 4, lines 1 - 6). The examiner further asserts that the recitation that the tray has an attenuation not exceeding a level 50% greater than the impression material has not been given patentable weight in the claim because the impression material not positively claimed.

Claim 24 has been cancelled; the rejected language does not appear in other claims.

Claim Rejections - 35 USC 103

Re Claims 1 - 19, 21, and 22

The referenced claims have been rejected by the examiner that the assertion that they are unpatentable over Kaza (U.S. 2003/0129565) in view of Freeman (U.S. 4,375,966).

Claims 21 and 22 have been cancelled; the rejected language does not appear in other claims.

Independent claims 1 and 15 have been amended. These two amended independent claims are written in a parallel manner, claim 1 will be used as a model for these remarks, with regard to Kaza and Freeman. Underlined language calls attention to the amended claim elements and limitations. Support for these new elements and limitations is provided in the paragraphs that follow.

- "1. (Amended) A method ~~to create~~ of creating a digital model of a patient's teeth, comprising:
- taking an impression of the patient's teeth using a dental impression system configured to improve the quality of scanned data from a dental impression, the system including an impression material and a dental tray adapted to hold the impression material, the dental tray made of a tray material, each of the impression and tray materials having a respective radiopacity, at least one of the materials being formulated with a radiopaque agent such that the respective radiopacities of the materials approximately match each other ~~the impression material having a given x-ray attenuation factor, the tray comprising a thermoplastic resin compounded with at least one radiopaque agent, the dental tray having an attenuation factor not exceeding a level 50% greater than that of the impression material;~~
 - scanning the impression and the dental tray using a radiographic source; and
 - generating the digital model with scanned data."

In his response to claims and arguments previously made by applicants, the examiner asserts that while it's true that Freeman does not specifically disclose that the tray has an attenuation not exceeding a level 50% greater than the impression material, that it would have been obvious or routine to develop such an optimum opacity or attenuation characteristic of the tray.

The amended claims are now directed not to the radiopacity (or the attenuation factor) of the tray *per se*, but rather to the radiopacities of *both* the tray material and the impression material, and in particular to radiopacities of the two materials relative to each other. These elements are thus clearly distinguished from both Kaza and Freeman. Kaza, as the examiner notes, does not teach using a radiographic agent in the dental tray, nor (further) does he teach

using a radiographic agent in the dental impression material. While Freeman does provide a bare mention of the use of a radiographic agent in the dental tray, there is no mention of an impression material, nor (of course) inclusion of a radiographic agent therein. Further, no matter how these two references are combined, there is no totaling that yields or suggests relating the radiopacities of the dental tray material and the impression material to each other, as this does the presently amended claim element (*i.e.*, that the “respective radiopacities of the materials approximately match each other”).

With regard to support from the specification, paragraph 32 of the application, for example, contains “For the computed tomography scanning method employed it is recommended that the X-ray characteristics of the dental tray be formulated so that its radiopacity matches or closely approximates the radiopacity of the impression material.”

Paragraphs 34 - 36 of the present application provide substantial support for claims elements directed to adjusting the radiopacity of the *impression* material, in addition to adjusting the radiopacity of the tray material. The first sentence of paragraph 35, for example, reads “Depending on the radiopacity of the tray and impression materials in some applications it may be useful to directly compound a radiopaque material into the impression material to achieve a desired attenuation.”

Amending of the preamble of claim 1 so as to claim a “method of creating” is made for clarity and form. The preamble of claim 15 has also been amended for clarity such that it is clear that the digital model of the patient’s teeth is derived “from scanned data of improved quality”. Language in paragraph 31 of the application supports that the amended preamble of claim 15, where is noted that “a radiopaque agent is added to the thermoplastic resins to attenuate the intensity of a scanner’s X-ray beam and *to improve the quality of the scan data*”.

Inasmuch as independent claims 1 and 15 are no longer obvious in view of the combination of Kaza and Freeman, so are dependent claims 2 - 13, and 16 - 20 also exonerated of being obvious, as they merely provide limitations to their respective patentable base claim.

The preceding remarks directed to the patentability brought to these independent claims by the amended elements also apply to new claims, as explained further, below.

Re Claim 20

Claim 20 has been rejected by the examiner with the assertion that is unpatentable over Kaza (U.S. 2003/0129565) in view of Freeman (U.S. 4,375,966) per claims 1 and 15, and in further view of Coscina (U.S. 3,878,610).

Applicants acknowledge the examiner's comments with regard to Coscina's plurality of prongs, first wall, and tearable portions thereof. However, claim 20 depends from now amended claim 15, whose patentability is discussed above. The elements of claim 20 merely provide limitations on the now patentable claim 15.

Re Claims 23, 25, 26, and 29

The examiner has rejected these referenced claims with the assertion that they are unpatentable over Freeman. Claims 23, 25, 26, and 29 have been cancelled; the language does not occur in other claims.

Re Claims 27, 30 - 32

The examiner has rejected these referenced claims with the assertion that they are unpatentable over Freeman in view of Ziegler (U.S. 6,540,516).

The subject matter particular to the claims (27, 30, 31, and 32) for which the examiner has applied Ziegler, in conjunction with the base reference of Kaza, includes a detailing of the one or more radiopaque agents, bismuth subcarbonates in particular. As above, by virtue of distinguishing the present claims from Kaza, the addition of Ziegler does not create an anticipation that would be obvious. More particularly, the Ziegler mention of bismuth subcarbonate as a radiopaque agent is directed to a "platform", but not to an impression material.

Claims 27 (dental tray with a radiopaque agent), 30 (impression material with radiopaque agent), 31 (tray radiopaque agent specified), and 32 (dental impression material with a radiopaque agent) have been cancelled.

Subject matter related to a dental tray material with radiopaque agents occurs in new claims 34, 37, and 38, each depending from independent claim 33, and in claims 43, 46, and 47, each depending from independent claim 42, as discussed below in "new claims".

Re Claim 28

Claim 20 has been rejected by the examiner with the assertion that is unpatentable over Freeman (4,375,966) in view of Coscina (U.S. 3,878,610).

The subject matter unique to the claims for which the examiner has applied Coscina (claims 20 and 28) relates to detachable portions of the dental try, and has not been included in any of the now-pending new claims. Claim 28 has been cancelled. Claim 20 is dependent on claim 15 which has now been amended into a patentable form, as detailed above.

Drawings

Applicant appreciates the examiner's acknowledgment of receiving the drawings on June 19, 2006, and approving them.

New Claims

The remarks directed toward explaining the patentability of amended independent claims 1 and 15, above, apply broadly to new independent claims 33 (a method of improving the quality of scanned data), 42 (a dental impression configured to improve the quality of scanned data), and 51 (a digital model of a dental impression), in that each of these claims includes the significant elements of being directed toward the (1) radiopacities of *both* the tray material and the impression material, with (2) the limitation that they approximately match each other.

Other elements of new claims and explanatory remarks are as follows:

Independent claim 33 is directed toward "a method of improving the quality of scanned data". The "improving the quality" element of the preamble is similar to the amended element of claim 15, as discussed above, and for which support in the specification is to be found in paragraph 31.

Dependent claim 40 is directed to adjusting the radiopacity of the impression material by providing a coating on the surface thereof. This location contrasts with the location of the radiopaque agent being compounded directly into the impression material, as claimed in claim 39. This surface location, per claim 40, is supported by paragraph 35, where the final sentence reads "Furthermore, in addition to being premixed into the impression material, the radiopaque material may be in the form of a spray, dip, or powder layer that is used to coat the surface of the

impression material in order to make the surface more visible to the scanner after the impression has been captured, but prior to the scan”.

Claim 51 is a stand alone independent claim directed toward a digital model of improved quality. The improved quality derives from a system as that claimed in claim 15, whose patentability has been discussed above.

As discussed above, subject matter from rejected claims 27 and 30 - 32, related to a dental tray material with radiopaque agents occurs in new claims 34, 37, and 38, each depending from independent claim 33, and in claims 43, 46, and 47, each depending from independent claim 42, as discussed below in “new claims”. Inasmuch as applicant believes that independent claims 33 and 42 are patentable (as discussed above), the new dependent claims merely provide limitations on the independent claims, and thus, they too, are patentable.

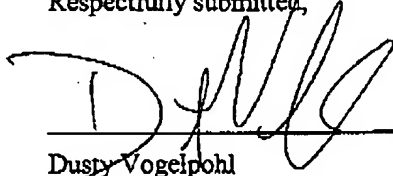
CONCLUSION

It is respectfully submitted that all of the Examiner's rejections are satisfied by the pending now-amended and new claims. Accordingly, applicant submits that the application is now in order for allowance, respectfully requests reconsideration of the application, and courteously solicits allowance thereof. The Examiner is invited to contact applicant's attorney, Dusty Vogelpohl, via telephone at (650) 328-8500, if it would further the allowance of the present application. The applicant further submits that no new matter has been added.

Please charge any deficiencies and credit any overpayments to Deposit Account No. 50-2638, referencing Attorney Docket No. AT-000219. Please charge any corresponding fee to Deposit Account No. 50-2638.

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Respectfully submitted,



Dusty Vogelpohl
Reg. No. 55,703

GREENBERG TRAURIG, LLP
CUSTOMER NUMBER 56188
1900 University Avenue, Fifth Floor
East Palo Alto, CA 94303
Phone: (650) 328-8500
Fax: (650) 328-8508
E-Mail: vogelpohld@gtlaw.com